

CLAIMS

1. A power transmission belt comprising:
an endless body having a length, an inside, and an outside,
the endless body comprising cogs on at least one of the inside and outside
of the body and spaced along the length of the body so as to define alternating
cog crests and cog troughs,
the cog crests each having oppositely facing side surfaces with an apex
between the oppositely facing side surfaces; and
a reinforcing fabric on the at least one of the inside and outside of the body,
the reinforcing fabric having first and second spaced end portions with a
first free end at the first end portion and a second free end at the second end
portion,
the first and second end portions overlapped so that the first and second
free ends are each at a side surface on a cog crest.

2. The power transmission belt according to claim 1 wherein the first
and second free ends are each at one of the side surfaces on a first cog.

3. The power transmission belt according to claim 2 wherein the first
and second free ends are at the same side surface on the first cog.

4. The power transmission belt according to claim 1 wherein the body
comprises a compression rubber layer and a tension rubber layer and the cogs are
formed in at least the compression rubber layer.

2 5. The power transmission belt according to claim 4 wherein the body comprises at least one cushion rubber layer and at least one load carrying cord embedded in the cushion rubber layer.

2 6. The power transmission belt according to claim 1 wherein the cogs are formed in a rubber layer, the rubber layer has ends which are mated at a joint, and the joint is at a cog crest.

2 7. The power transmission belt according to claim 6 wherein the free ends are each at a side surface on a first cog crest and the ends of the rubber layer are mated at the first cog crest.

2 8. The power transmission belt according to claim 6 wherein the joint is formed as a line and one of the first and second free ends is aligned with the line of the joint.

2 9. The power transmission belt according to claim 1 wherein there are cogs on the other of the inside and outside of the body and spaced along the length of the body so as to define alternating cog crests and cog troughs.

2 10. The power transmission belt according to claim 8 wherein the line of the joint makes an angle with a lengthwise line through the body that is equal to 60-90°.

2 11. The power transmission belt according to claim 8 wherein the line of the joint makes an angle with a lengthwise line through the body that is equal to 65-80°.

2 12. The power transmission belt according to claim 1 wherein the first and second end portions are overlapped at the apex of a cog crest.

2 13. The power transmission belt according to claim 1 wherein the body comprises a rubber layer and there are short reinforcing fibers in the rubber layer.

2 14. The power transmission belt according to claim 13 wherein the rubber layer defines a compression section.

2 15. The power transmission belt according to claim 5 wherein there are short reinforcing fibers in the cushion rubber layer.

2 16. The power transmission belt according to claim 1 wherein the reinforcing fabric comprises at least one of a) cotton fibers, b) polyester fibers, and c) nylon fibers.

2 17. The power transmission belt according to claim 16 wherein the reinforcing fabric is made by one of a) plain weaving, b) twill weaving, and c) sateen weaving.

2 18. The power transmission belt according to claim 17 wherein the reinforcing fabric comprises warp and weft yarns crossing at an angle of 90-120°.

2 19. The power transmission belt according to claim 18 wherein the reinforcing fabric is treated with an RFL solution and friction coated with a rubber composition.

2 20. A method of forming a power transmission belt/belt sleeve, said method comprising the steps of:

4 placing a reinforcing fabric against an unvulcanized rubber layer;

6 forming the reinforcing fabric and unvulcanized rubber layer against a mold surface having alternating grooves and projections to produce a cog pad having first and second spaced ends and cog crests and cog troughs alternating between the first and second spaced ends,

8 each cog crest having oppositely facing side surfaces with an apex between the oppositely facing side surfaces;

10 processing the cog pad at the first end of the cog pad so that a part of the fabric layer projects beyond the rubber layer at the first end of the cog pad;

12 processing the reinforcing fabric at the second end of the cog pad to expose the rubber layer;

14 joining the rubber layer at the first and second ends of the cog pad;

16 overlapping the part of the reinforcing fabric at the first end of the cog pad with the reinforcing fabric at the second end of the cog pad so that a) a free end of the part of the reinforcing fabric at the first end of the cog pad is at a side

18 surface on a cog crest and b) a free end of the reinforcing fabric at the second end
of the cog pad is on a cog crest; and

20 combining the cog pad with at least one additional component to define a
power transmission belt/belt sleeve having a length.

21. The method of forming a power transmission belt according to claim
2 20 wherein the step of combining the cog pad with at least one other component
comprises combining the cog pad with at least one cushion rubber layer and at
4 least one load carrying cord extending lengthwise of the body and embedded in
the cushion rubber layer.

22. The method of forming a power transmission belt according to claim
2 21 wherein the rubber layer is a compression rubber layer and the step of
combining the cog pad with at least one other component comprises combining
4 the cog pad with a tension rubber layer.

23. The method of forming a power transmission belt according to claim
2 20 wherein the step of joining the rubber layer comprises placing the cog pad
around a mold with alternating grooves and projections and joining the rubber
4 layer at the first and second ends with the cog pad placed around the mold.

24. The method of forming a power transmission belt according to claim
2 20 further comprising the step of vulcanizing the cog pad with at least one
additional component.

25. The method of forming a power transmission belt according to claim
2 24 further comprising the step of cutting the power transmission belt/belt sleeve
to define a plurality of power transmission belts.

26. The method of forming a power transmission belt according to claim
2 20 further comprising the step of forming the reinforcing fabric by one of a) plain
weaving, b) twill weaving, and c) sateen weaving.

27. The method of forming a power transmission belt according to claim
2 20 wherein the step of joining the rubber layer comprises mating ends of the
rubber layer at the first and second ends of the cog pad to produce a joint at a cog
4 crest.

28. The method of forming a power transmission belt according to claim
2 20 wherein the step of joining the rubber layer comprises mating ends of the
rubber layer at the first and second ends of the cog pad to produce a joint line that
4 is at an angle of 60-90° to a line extending between the first and second ends of
the cog pad.

29. The method of forming a power transmission belt according to claim
2 28 wherein the angle is between 65 and 80°.

30. The method of forming a power transmission belt according to claim
2 20 wherein the free end of the part of the reinforcing fabric at the first end of the

4 cog pad and the free end of the reinforcing fabric at the second end of the cog pad
are on the same cog crest.

2 31. The method of forming a power transmission belt according to claim
20 wherein the free end of the part of the reinforcing fabric at the first end of the
4 cog pad and the free end of the reinforcing fabric at the second end of the cog pad
are on the same side surface on the same cog crest.

2 32. The method of forming a power transmission belt according to claim
20 wherein the free end of the part of the reinforcing fabric at the first end of the
4 cog pad and the free end of the reinforcing fabric at the second end of the cog pad
are on different side surfaces on the same cog crest.

2 33. A method of forming a power transmission belt/belt sleeve, said
method comprising the steps of:

4 placing a reinforcing fabric against an unvulcanized rubber layer;

6 forming the reinforcing fabric and unvulcanized rubber layer against a mold
surface having alternating grooves and projections to produce a cog pad having
first and second spaced ends and cog crests and cog troughs alternating between
the first and second spaced ends,

8 each cog crest having oppositely facing side surfaces with an apex between
the oppositely facing side surfaces;

10 processing the cog pad at the first end of the cog pad so that a part of the
fabric layer projects beyond the rubber layer at the first end of the cog pad;

12 joining the rubber layer at the first and second ends of the cog pad;

overlapping the part of the reinforcing fabric at the first end of the cog pad
14 with the reinforcing fabric at the second end of the cog pad so that a) a free end
of the part of the reinforcing fabric at the first end of the cog pad is at a side
16 surface on a cog crest and b) a free end of the reinforcing fabric at the second end
of the cog pad is on a cog crest;

18 combining the cog pad with at least one additional component to define a
power transmission belt/belt sleeve having a length.

34. The method of forming a power transmission belt according to claim
2 33 wherein the step of combining the cog pad with at least one other component
comprises combining the cog pad with at least one cushion rubber layer and at
4 least one load carrying cord extending lengthwise of the body and embedded in the
cushion rubber layer.

35. The method of forming a power transmission belt according to claim
2 34 wherein the rubber layer is a compression rubber layer and the step of
combining the cog pad with at least one other layer comprises combining the cog
4 pad with a tension rubber layer.

36. The method of forming a power transmission belt according to claim
2 33 wherein the step of joining the rubber layer comprises placing the cog pad
around a mold with alternating grooves and projections and joining the rubber
4 layer at the first and second ends with the cog pad placed around the mold.

37. The method of forming a power transmission belt according to claim 33 further comprising the step of vulcanizing the cog pad with at least one additional component.

38. The method of forming a power transmission belt according to claim 37 further comprising the step of cutting the power transmission belt/belt sleeve to define a plurality of power transmission belts.

39. The method of forming a power transmission belt according to claim 33 further comprising the step of forming the reinforcing fabric to be flush with the second end of the cog pad.

40. The method of forming a power transmission belt according to claim 33 wherein the step of joining the rubber layer comprises mating ends of the rubber layer at the first and second ends of the cog pad to produce a joint at a cog crest.

41. The method of forming a power transmission belt according to claim 33 wherein the step of joining the rubber layer comprises mating ends of the rubber layer at the first and second ends of the cog pad to produce a joint line that is at an angle of 60-90° to a line extending between the first and second ends of the cog pad.

42. The method of forming a power transmission belt according to claim 41 wherein the angle is between 65 and 80°.

2 43. The method of forming a power transmission belt according to claim
33 wherein the free end of the part of the reinforcing fabric at the first end of the
4 cog pad and the free end of the reinforcing fabric at the second end of the cog pad
are on the same cog crest.

2 44. The method of forming a power transmission belt according to claim
33 wherein the free end of the part of the reinforcing fabric at the first end of the
4 cog pad and the free end of the reinforcing fabric at the second end of the cog pad
are on the same side surface on the same cog crest.

2 45. The method of forming a power transmission belt according to claim
33 wherein the free end of the part of the reinforcing fabric at the first end of the
4 cog pad and the free end of the reinforcing fabric at the second end of the cog pad
are on different side surfaces on the same cog crest.